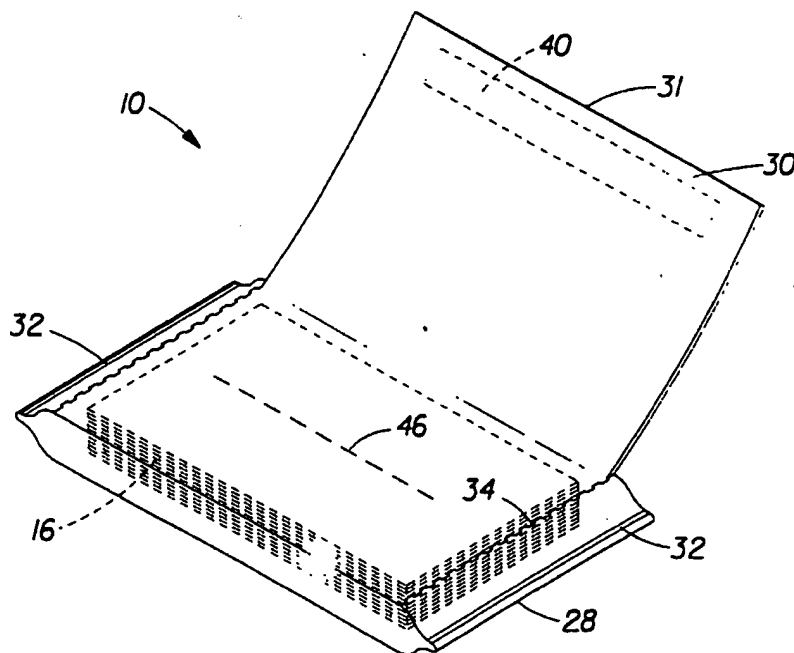




INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁷ : B65D 83/08, 75/20	A1	(11) International Publication Number: WO 00/61458 (43) International Publication Date: 19 October 2000 (19.10.00)
<p>(21) International Application Number: PCT/US00/10165</p> <p>(22) International Filing Date: 14 April 2000 (14.04.00)</p> <p>(30) Priority Data: 60/129,204 14 April 1999 (14.04.99) US</p> <p>(71) Applicant (for all designated States except US): THE PROCTER & GAMBLE COMPANY [US/US]; One Procter & Gamble Plaza, Cincinnati, OH 45202 (US).</p> <p>(72) Inventors; and (75) Inventors/Applicants (for US only): HAAWLITSCHKE, Achim [DE/DE]; Goerlitzer Strasse 9, D-41472 Neuss (DE). DUEMPELMANN, Dirk [DE/DE]; Am Entenpfuhl 3, D-50765 Nordrhein-Westfalen (DE). KUNZE, Hansjuergen, J. [DE/DE]; Sulzbacher 40, D-65824 Schwalbach am Taunus (DE). HOOPER, Jane, Ann [US/US]; 9722 Friar Tuck Drive, West Chester, OH 45069 (US). GRUBSTEIN, Katherine, Yerre [US/US]; 2715 Markbreit Avenue, #1, Cincinnati, OH 45209 (US). HERNANDEZ, Diego A. [MX/US]; 6083 Center Hill Avenue, Cincinnati, OH 45224 (US). BURKETT, Timothy, Alan [US/MX]; Paseo De La Herradura, No. 303, Casa 62, Parques De La Herradura, Huixquilucan (MX). LEWIS, Robert, Drennan [US/US]; 6114 Sugartree Court, Hamilton, OH 45011 (US).</p>	<p>CASTILLEJOS, Enrique Elmo Acosta [MX/MX]; Encino Grande 129, Casa D, Col Tetelpan, Mexico City (MX).</p> <p>(74) Agents: REED, T., David et al.; The Procter & Gamble Company, 5299 Spring Grove Avenue, Cincinnati, OH 45217-1087 (US).</p> <p>(81) Designated States: AE, AL, AM, AT, AT (Utility model), AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, CZ (Utility model), DE, DE (Utility model), DK, DK (Utility model), DM, EE, EE (Utility model), ES, FI, FI (Utility model), GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK (Utility model), SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).</p> <p>Published With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</p>	
<p>(54) Title: PACKAGE FOR SHEET DISPENSING</p> <p>(57) Abstract</p> <p>A flexible package (10) for containing and dispensing sheet products (16), such as facial tissues, premoistened wet wipes, and the like is disclosed. The package comprises a single, unitary piece of polymer film formed to define a pocket having a back face, a front face, two opposing longitudinal edges formed by a fold. Two sealed regions (32) are disposed near two opposing side edges (28), and a flexible flap (30) is hingedly rotatable from a first closed position generally about one of the longitudinal edges, the flap covering at least a portion of the front face when in the first position. The flap has a transverse centerline and at least one line of weakness (34) disposed on either side of the centerline inboard of the side edges, the lines of weakness allowing a portion of the flap to be frangibly fixed in the first position. A method of forming the package of the present invention is also disclosed.</p>		



FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
AT	Austria	FR	France	LU	Luxembourg	SN	Senegal
AU	Australia	GA	Gabon	LV	Latvia	SZ	Swaziland
AZ	Azerbaijan	GB	United Kingdom	MC	Monaco	TD	Chad
BA	Bosnia and Herzegovina	GE	Georgia	MD	Republic of Moldova	TG	Togo
BB	Barbados	GH	Ghana	MG	Madagascar	TJ	Tajikistan
BE	Belgium	GN	Guinea	MK	The former Yugoslav Republic of Macedonia	TM	Turkmenistan
BF	Burkina Faso	GR	Greece	ML	Mali	TR	Turkey
BG	Bulgaria	HU	Hungary	MN	Mongolia	TT	Trinidad and Tobago
BJ	Benin	IE	Ireland	MR	Mauritania	UA	Ukraine
BR	Brazil	IL	Israel	MW	Malawi	UG	Uganda
BY	Belarus	IS	Iceland	MX	Mexico	US	United States of America
CA	Canada	IT	Italy	NE	Niger	UZ	Uzbekistan
CF	Central African Republic	JP	Japan	NL	Netherlands	VN	Viet Nam
CG	Congo	KE	Kenya	NO	Norway	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NZ	New Zealand	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's Republic of Korea	PL	Poland		
CM	Cameroon	KR	Republic of Korea	PT	Portugal		
CN	China	KZ	Kazakhstan	RO	Romania		
CU	Cuba	LC	Saint Lucia	RU	Russian Federation		
CZ	Czech Republic	LI	Liechtenstein	SD	Sudan		
DE	Germany	LK	Sri Lanka	SE	Sweden		
DK	Denmark	LR	Liberia	SG	Singapore		
EE	Estonia						

PACKAGE FOR SHEET DISPENSING

5

10

15

FIELD OF THE INVENTION

The present invention relates to packages for containing and dispensing sheet products. In particular, the present invention relates to flexible packages for dispensing tissue products, such as facial tissues.

20

BACKGROUND OF THE INVENTION

25

Disposable wiping articles are well known in the art. For example, cellulosic fibrous structures, such as paper webs, are one form of a disposable wiping article. Such paper webs can be used for facial tissues, toilet tissue, paper towels, and napkins, each of which is in widespread use today. Consumers often carry tissues with them when leaving their homes, or at various locations within the home. Many times the tissue is used for personal cleaning tasks, such as nose care. Often the tissue is used to clean-up children, small spills, dirty surfaces, or for other personal hygiene tasks, for example, wiping the face, hands, or post-toilet use.

30

Another type of disposable wiping articles often used by consumers are pre-moistened wipes. Pre-moistened wipe articles typically have a substrate which includes one or more materials or layers, for example nonwoven materials. The substrate can be pre-moistened with a wetting agent prior to use, or alternatively, can be combined with a

liquid at the point of use of the article. Pre-moistened wiping articles are also referred to as "wet wipes" and "towelettes." Wet wipes are also often carried with users when they leave their homes and used for various personal cleaning tasks.

Packages for wipes have been developed that allow for small numbers of wipes, for example 10-12 sheets, to be carried by consumers. In general, packages of this sort are made to fit in the consumers pocket, and include a flexible plastic wrap with a perforated line of weakness to form a dispensing opening. The packages may also have a separate flap member designed to cover the dispensing opening when not in use, so as to keep dust, moisture and other elements from contacting the wipes. A moisture impervious plastic wrap and sealing flap, or other means of closure, is especially important for premoistened wet wipes.

Many packages for dispensing sheets of wipes such as tissues or pre-moistened wipes have been developed to allow consumers to conveniently carry the wipes in their pockets, purses, or automobiles. For example, U.S. Patent No. 4,131,195, issued December 26, 1978 to Worrell, Sr., describes a disposable, compactable moisture-impervious package for dispensing a stack of premoistened sheets. However, the package disclosed therein requires the cutting and adhering of separate pieces of material to form each package.

Resealable packages having an adhesive sealing member are also known. For example, U.S. Patent No. 5,725,311 issued March 10, 1998 to Ponsi et al. discloses a resealable package having a label applies over an opening into the package. Such packages come in many various shapes and designs, but all generally involve the use of relatively stiff labels, stickers, or other resealable adhesive members.

Hard plastic, i.e., rigid, cases for containing wipes have been developed, but they are not generally more bulky, and less suited for carrying on the person of the user, for example in a pocket.

Current methods for forming a package for dispensing wipes involve the cutting and adhering together of many parts, such as a front face, a rear face, and any adhesive stickers. If a flap is used to cover a dispensing opening, the flap must be cut and adhered in a separate process, resulting in additional manufacturing complexity and cost.

Accordingly, it would be desirable to have a package for dispensing wipes that is relatively inexpensive to manufacture.

Additionally, it would be desirable to have a package suitable for dispensing dry tissues or wet pre-moistened wipes, having a flap member to cover a dispensing opening, the package being relatively inexpensive to manufacture.

SUMMARY OF THE INVENTION

A flexible package for containing and dispensing sheet products, such as facial tissues, premoistened wet wipes, and the like is disclosed. The package comprises a single, unitary piece of polymer film formed to define a pocket having a back face, a front face, two opposing longitudinal edges formed by a fold. Two sealed regions are disposed near two opposing side edges, and a flexible flap is hingedly rotatable from a first closed position generally about one of the longitudinal edges, the flap covering at least a portion of the front face when in the first position. The flap has opposing side edges substantially coincident to and sealed at the sealed regions. The flap has a transverse centerline and at least one line of weakness disposed on either side of the centerline inboard of the side edges, the lines of weakness allowing a portion of the flap to be frangibly fixed in the first position.

The flexible package preferably comprises a heat-sealable polymer, for example, polyethylene. A dispensing opening, for example on the front face of the pocket portion, allows dispensing of individual sheets of the stack of sheet products.

A method of forming the package of the present invention is also disclosed. The method steps comprises providing a substantially rectangular flexible polymer sheet of suitable size, the sheet having first and second opposing sides defining a first dimension and third and fourth opposing sides defining a second dimension. Two lines of weakness are formed, each the lines of weakness extending generally orthogonal from the first side, in the direction of the second side. A stack of the sheet products is placed on the polymer sheet, the sheet products being substantially centrally disposed with respect to the first and second short sides. A first portion of the polymer sheet is folded such that the fourth side is disposed approximately parallel to the third side and approximately one-third the length from the third side thereby forming a pocket region containing the stack of sheet products. A second portion of the polymer sheet is folded such that the third side is disposed approximately parallel to the fourth side to form a tri-folded package having first

and second opposing side edges. A portion of the tri-folded polymer sheet is then bonded near the first and second opposing side edges.

BRIEF DESCRIPTION OF THE DRAWINGS

5 FIG. 1 is a plan view of a package of the present invention.

FIG. 2 is a cross-sectional view of the package shown in FIG. 1.

10 FIGs. 3 and 3A are cross-sectional views of an alternative package configuration for the package shown in FIG. 1.

FIGs. 4 and 4A are cross-sectional views of an alternative package configuration for the package shown in FIG. 1.

15 FIG. 5 is an isometric view of a package of the present invention showing the flap in an open position.

FIG. 6 is an isometric view of another embodiment of a package of the present invention showing the flap in an open position.

20

FIGs. 7A-7E are schematic illustrations of a polymer sheet in various stages of being formed into a package of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

25 While the following disclosure describes the package of the present invention primarily in relation to facial tissues, it is to be understood that the package is not limited to the dispensing of such materials. The package of the present invention may be useful for the packaging of any material that may be dispensed in individual sheets, such as bath tissue, napkins, or paper toweling. In particular, the package of the present invention can
30 be useful for the containing and dispensing of premoistened wipes, sometimes referred to as wet wipes, or towelettes.

As used herein "sheet" or "sheet product" refers to the products to be contained in and dispensed from the package of the present invention. The terms can refer to, for example, tissues or premoistened wipes.

As used herein, the term "tissue" refers to a dry cellulosic substrate, preferably a substrate having sufficient softness and absorbency to be usable as a facial tissue, bath tissue, napkin or as paper toweling. By way of non-limiting example, a tissue for dispensing from the package of the present invention is marketed by The Procter & Gamble Co. as PUFFS® facial tissues.

As used herein, the term "wipe" refers to a premoistened wipe impregnated with appropriate cleansing solutions or lotions. For example, the wipe may be a baby wipe, an adult wipe, a hard surface cleaning wipe, etc. The intended use of the wipe, however, does not limit the final product. By way of non-limiting example, a preferred wipe for dispensing from the package of the present invention is marketed by The Procter & Gamble Co. as PAMPERS® baby wipes.

A package according to the invention is shown generally at 10 in the drawing figures. The package can be relatively rigid, but is more preferably relatively flexible to allow for comfortable carrying in a pocket of the user. Thus, the disclosure herein is directed primarily toward flexible embodiments of the present invention, but is not to be so limited. Indeed, the principles of operation and the useful benefits can be realized in more rigid executions as well.

As shown in FIGs. 1 and 2, the package 10 includes a flexible package body 12 formed of a single piece of flexible film, such as polymer film. The body 12 forms an internal space or pocket 14 for housing the sheet contents 16 of the package 10. The pocket 14 has a front face 18 and a back face 20. The sheets 16 are preferably a series of folded, stacked, discrete sheets, such as tissues or wipes. In a preferred embodiment, the sheets 16 are stacked C-folded PUFFS® facial tissues.

The package 10 is preferably generally rectangular in shape, as viewed in FIG. 1. The package 10 has two opposing longitudinal sides 22 and 24, each formed by a fold of the flexible film. Two opposing end, or side edges 26 and 28 are formed by sealing together front face 22, back face 24 and flap 30 in sealed regions 32. Sealed regions 32 are preferably moisture impervious, and can be formed by methods known in the art, such as by application of pressure sensitive adhesives, hot melt adhesives, melt bonding, or

ultrasonic bonding. In a preferred embodiment, package body 12 is formed of a heat-sealable material, such as polyethylene. Sealed region 32 can thus be formed by the application of heat and pressure, such as by the use of heated bars, rollers, or other heated pressure surfaces.

5 Flap 30 is flexible and can be hingedly rotatable from a first position as shown in FIG. 2, where it covers a portion of the front face 18 of the pocket 14. In a preferred embodiment, flap 30 covers substantially all of front face 18. Flap 30 is rotatable generally about the region of the fold of body 12 that forms longitudinal side 22. When formed by the method of the present invention, flap 30 is frangibly fixed in an initial first,
10 closed position, as shown in FIGs. 1 and 2. Lines of weakness 34, such as the perforated lines shown in FIG. 1, are provided, such that flap 30 can be opened by tearing along the lines of weakness, to an open position, as shown in FIG. 5.

The lines of weakness 34 can be formed by scoring, perforating, or otherwise creating a line of preferred tearing in the flexible film of the package 10 of the present
15 invention. In general, one line of weakness is provided on either side of a transverse centerline 36, the lines of weakness being inboard of the side edges 26 and 28, and inboard of the sealed regions 32. Although shown in FIG. 1 as being linear and generally parallel to side edges 26 and 28, the lines of weakness need not be so. The lines of
20 weakness may be non-linear, and may be generally angled with respect to side edges 26 and 28. For example, the lines of weakness may be angled, such that when opened, the open portion of flap 30 is substantially trapezoidal in shaped. Alternatively, the lines of weakness may be non-linear, such that the flap, when opened takes the shape of a half-circle.

The lines of weakness 34 can extend from the distal edge 31 of flap 30 any distance
25 sufficient to provide access to the dispensing opening, as disclosed in more detail below. In a preferred embodiment, lines of weakness 34 extend substantially to longitudinal side 22. In one embodiment, stress relief means 36 are provided to prevent further undesired tearing of flap 30 beyond that necessary for dispensing of sheets 16. For example, holes or apertures 36 can be formed, as shown in FIG. 1, at the proximal end of the lines of
30 weakness.

When reclosed, flap 30 can be held in a first, closed position by any suitable means, as is known in the art. For example, a tape tab 38, as shown in FIGs. 1 and 2 can be

permanently affixed to flap 30, with a resealable adhesive being applied to the portion of tape tab 34 contacting the front face 18 of pocket 14. Other resealing means include the placement of suitable adhesives on the pocket-facing side of the flap, such as in adhesive region 40, as shown in FIG. 5. Alternatively, adhesive region 40 may be disposed on the flap-facing side of the front face 18 of pocket 14. Adhesive region 40 may be disposed upon the flap 30 or front face 18 in any desired size and shape. For example, adhesive may be disposed on the flap generally along the distal edge (as shown in FIG. 5) or along the distal edge and sides of the flap. The more adhesive applied, the more sealing against the elements when the flap of the package is closed. However, it is important that the flap can be opened easily as well, so a combination of suitable type of adhesive, amount and placement of adhesive can be applied as necessary to achieve the desired balance between sealing against the elements and ease of opening.

One feature of the package of the present invention is the dispensing opening 42, from which individual sheets are dispensed or withdrawn by the user after opening the flap 30. In the most simple embodiment, as shown in FIG. 2, dispensing opening 42 is formed by simply not sealing the edge 44 of polymer sheet near fold at longitudinal side 22. The user opens the flap by grasping the flap near distal end 31 and lifting. Once the flap is opened, the user simply reaches in opening 42 near the proximal portion of the flap and withdraws the desired sheet or sheets.

In another embodiment, as in cross-section in FIG. 4, opening 42 is formed by a slit, or by forming a line of weakness that can be easily formed into a slit by the user. For example, perforated line of weakness 46 shown in FIG. 5 can be easily torn open by the user to form slit opening 42. In another embodiment, the opening 42 can be formed in the shape of an oval, circle, or other desired shape, as shown in FIG. 6. In general, dispensing opening 42 can be any desired shape and size, depending on the sheets to be dispensed. For dry tissues, it is best to have the generally oval opening as shown in FIG. 6. For wet wipes, it is best to have a generally small opening, such as the slit formed by breaking the frangible perforations shown in FIG. 5.

Another alternative embodiment of the package of the present invention is shown in FIG. 6. The package shown in FIG. 6 has a generally oval shaped dispensing opening 42, as discussed above. The dispensing opening is formed by making a frangible line of weakness in the shape of the opening, such as in the oval shape shown. One method of

forming the line of weakness is by making perforations. Adhesive region 40 can be disposed to cover essentially all the flap area as shown, and in particular, to cover the entire region of the opening and the region immediately surrounding the dispensing opening 42. When opened, the portion 48 of front face 18 removed to form opening 42, remains adhered to flap 30. Thereafter, the flap can be reclosed and opened as desired, the portion 46 aiding in preventing flap adhesive from inadvertently adhering to the sheet contents disposed in pocket 14. Alternatively, the adhesive can be applied only in the region corresponding to the opening, such that when opened, the portion 48 of front face 18 removed to form opening 42, remains adhered to flap 30, as above, but there is no adhesive exposed outside of the area covered by portion 48.

If dispensing opening is formed in the front face 18 it is generally desirable to adhere edge 44 of polymer sheet at or near the fold at longitudinal side 22. For example, prior to folding the flap into the first, closed position during manufacture, and therefore prior to sealing sealed regions 32, longitudinal edge seal 50 can be formed, thereby sealing edge 44 to the flexible polymer material of the package. Sealing can be by any method known in the art, such as by adhesive, or ultrasonic welding, but is preferably heat sealed by application of heat and pressure to form a melt bonded edge seal 50. An alternative longitudinal edge seal 50 is formed by additionally sealing the proximal edge 52 of flap 30 during the sealing process, as shown in FIG. 3A. As above, sealing may be effected by any known method, such as by adhesive, heat, pressure, or a combination of these.

Another configuration of adhering edge 44 of polymer sheet at or near the fold at longitudinal side 22 is depicted in FIGs. 4 and 4A. In this configuration, edge 44 is itself folded over, forming an edge fold 54. As above, edge seal 50 can be effected by any known method, such as by adhesive, heat, pressure, or a combination of these. An alternative longitudinal edge seal 50 is formed by additionally sealing the proximal edge 52 of flap 30 during the sealing process, as shown in FIG. 4A.

Body 12 is preferably formed of a flexible, moisture impervious film material, such as a polymeric film. In a preferred embodiment, the film materials comprise heat-sealable polymeric materials such as polyethylene. In one embodiment, LDPE/LLDPE version EX-702 provided by Exxon Chemicals in the range of 1.0 - 4.0 mils was used. The thickness of the material is not critical, but the film should be of sufficient thickness to be

1 durable, flexible, and relatively soft to the touch when used. If an adhesive is used to effect closure of the flap, the material should be compatible with suitable resealable adhesives.

5 The package of the present invention can be made by hand, or can be made by adapting suitable packaging equipment, such as "flow wrap" equipment commonly used to apply plastic wrap packaging. The necessary steps for manufacturing the package are essentially the same whether made by hand or by machine, and they are disclosed below with reference to FIGs. 7A-7E.

10 A suitable flexible film material 60 is provided in a substantially flat-out configuration. Material 60 can be substantially rectangular, having first and second opposing long sides 62 and 64, and first and second opposing short sides 66 and 68. The long sides define a width W. The two short sides define a length L. Material 60 can be considered to be divided into substantially equal thirds, for example two outboard regions 70 and 74, and one inboard region 72. Whereas the term "third" is used herein, the term
15 is not to be limited to a literal third, e.g., $1/3$. Nevertheless, in general, the material is beneficially thought of as being in three regions, which can be substantially equal thirds, the three parts being delineated by imaginary lines 80 and 81, as shown in FIG. 7A.

Any lines of weakness can be formed in the material while in a generally flat-out configuration. For example, as shown in FIG. 7B, flap lines of weakness 34 can be
20 formed in one outboard third, and extending at least to the first short side 66. Similarly, dispensing lines of weakness 76, for example in the shape of an oval as shown in FIG. 7B can be formed while the material is in a generally flat-out configuration.

After the stack of sheet contents 16 is placed on the material generally in the inboard third region 72 of material 60, outboard third 74 having the dispensing opening disposed
25 thereon, is folded over as noted by arrow 76, such that second short side 68 is juxtaposed on or near the imaginary line dividing outboard third 70 and inboard third 72. As can be noted by careful comparison of the drawing figures, as described in these method steps, second short side 68 corresponds to edge 44 as shown in FIG. 2, for example. Likewise, this folding step forms the fold at longitudinal side 22 of package 10, also as shown in
30 FIG. 2. This folding step, therefore, is the first step in forming pocket 14, and outboard third 74 becomes front face 18 of pocket 14, while inboard third 72 becomes the back face 20 of pocket 14.

If desired, edge 44 can be folded and/or bonded at this time to form edge seal 50, as detailed with reference to FIGs. 3-4A above. If bonded by adhesive, an additional step of applying adhesive is necessary. Likewise, additional folding, heating, and pressure steps can be accomplished as necessary.

5 Next, outboard third 70 having the flap lines of weakness 34 is folded as indicated by arrow 78 in FIG. 7D. Again, as can be noted with careful comparison of the drawing figures, as described in these method steps, first short side 66 corresponds to distal flap edge 31 as shown in FIG. 1, for example. Likewise, this folding step forms the fold at longitudinal side 24 of package 10, as shown in FIG. 2. This folding step, therefore, is
10 the first step in forming flap 30.

After folding both outboard thirds as described above, the package appears nearly as shown in FIG. 1, which can be described as "tri-folded", and side edges 26 and 28 are formed. As the final necessary step, a sealing/bonding operation is performed to form sealed regions 32. In a preferred embodiment, sealed regions are formed by application
15 of heat and pressure to melt-bond the component layers of film material together. This can be accomplished by application of a heated wheel rolled across the region to be sealed, or by a heated bar, for example a heated anvil, being pressed in place in the region to be sealed.

Other variations in method steps can be made, or additional method steps added, as
20 desired. For example, if a tap tab, such as tab 38 shown in FIG. 1 is desired, it can be added at an appropriate stage of the process of making package 10. Likewise, it may be desirable to make the fold of the step depicted in FIG. 7D or 7E prior to placement of the sheet contents 16.

A continuous process utilizing a continuous web of roll-wound material 60 and
25 adapted flow-wrap equipment can be utilized to effect a commercially viable manufacturing process. In a continuous process, the material 60 could be reeled off in a machine direction, as indicated by the arrow MD in FIGs. 7A-7E, such that the width of the continuous web would correspond to the length of the discrete material 60 shown in FIG. 7A, for example. In a preferred process, lines of weakness 34 and 76, for example,
30 are formed in a separate step prior to winding the continuous web of material 60. If a printed polymer film is utilized, the lines of weakness can be formed in registry with the

pattern of the print. In the process, each process step can be arranged to likewise be in registry with the lines of weakness and/or the print pattern.

The process steps are essentially the same, with the necessary folds being made gradually, as with appropriately designed folding plows, for example. After the edge sealing step described with reference to FIG. 7E, a final cutting step can be accomplished so as to produce individual packages 10 from the continuous web of material 60.

The dimensions of the final package can be as needed, but in a preferred embodiment, the package of the present invention is meant to be carried in a pocket or purse. In a currently preferred embodiment, the dimensions are such that current commercial PUFFS® facial tissues can be utilized as the sheet contents 16 in a stack of C-folded sheets. Thus, the dimensions in a currently preferred embodiment, for a stack of about 10 tissues is about 4.5 inches (12 cm) on the short side, and about 9 inches (23 cm) on the long side, and about 3/4 inch (2 cm) thick, uncompressed.

The benefits of the method of the present invention, and the package produced thereby are evident from the disclosure herein. In particular, the method and package requires only a single piece of flexible film. It is feasible, but not necessary to cut and bond a separate flap member, for example. Additionally, when formed and prior to first use, the flap is fixed in a first, closed position, thereby protecting the sheet contents from dust, moisture, or other environmental contaminants prior to use. After first use, the flap completely covers the dispensing opening, thereby providing additional protection from the elements for the sheet contents therein. The process produces no wasted material. No unnecessary die cuts are required, and no material need be removed from the starting material, for example material 60. By utilizing commercial flow-wrap manufacturing equipment, the package of the present invention can thus be produced in commercial quantities in an economical and environmentally friendly manner.

When produced by the method of the present invention, many variations are possible, without departing from the scope of the present invention. For example, as shown in FIG. 8, the line of weakness 46 defining the portion of the dispensing opening can be nonlinear, forming another secondary flap member 84. Such a secondary flap member can be very beneficial when dispensing pre-moistened wipes. When closed, the actual opening of the dispensing aperture is minimal due to the minimal slit opening. However, in use the user can simply lift the flap up, thereby making a larger opening for

dispensing the wipe. After removing the wipe, the flap of the secondary opening can return to the closed position, thereby helping prevent moisture loss from the wet wipe contents. FIG. 8 also shows an alternative shape for flap 30 due to the non-linear line of weakness, perforation 34.

5 In another embodiment, a pressure sensitive adhesive can be applied to the back of the package (the side without the flap or dispensing opening) so that the package may be beneficially temporarily affixed to surfaces. Once affixed, the front side of the package having the flap and the dispensing opening is positioned for use. For example, the package may be affixed to the side of a refrigerator for home use, or the dashboard of a
10 car for use in an automobile. The adhesive can be applied by methods known in the art over an area of the package suitable to provide sufficient adhesive force. A release strip can be applied over the adhesive area prior to use. One pressure sensitive adhesive believed most beneficial for use on a package of the present invention is a removable adhesive such as the pressure sensitive adhesive having a low tack utilized on Post-it®
15 notes. For example, a suitable adhesive is an acrylate copolymer which is described in U.S. Pat. No. 3,691,140, issued September 12, 1972 to S. F. Silver, assigned to the Minnesota Mining & Manufacturing Co. of St. Paul, MN., and improvements thereof. Such an adhesive would allow the package of the present invention to be removeably affixed to surfaces.

20 In another embodiment, the lines of weakness frangibly fixing the flap in a first position can be extended to allow the flap to be completely removed by the user. For example, a perforation can be made near the proximal portion of the flap. The user can then open the flap as disclosed above, and simply continue tearing until the entire flap is removed.

25 While particular embodiments of the present invention have been illustrated and described, it would be obvious to those skilled in the art that various other changes and modification can be made without departing from the spirit and scope of the present invention. For example, as shown in FIG. 8, the line of weakness defining the portion of the dispensing opening can be nonlinear, and therefore forming another secondary flap
30 member. Such The foregoing is therefore intended to cover in the appended claims all such changes and modifications, as well as all combinations of features described herein, that are within the scope of the present invention.

What is-claimed is:

1. A package for containing and dispensing sheet products, said package characterized by:
 - (a) a single piece of planar sheet material formed to define a pocket having a back face, a front face, two opposing longitudinal edges, two sealed regions, each said sealed regions disposed near two opposing side edges, and a flexible flap hingedly rotatable from a first position about one of said longitudinal edges, said flap covering at least a portion of said front face when in said first position;
 - (b) said flap having opposing side edges, said side edges being juxtaposed with and sealed at said sealed regions; and
 - (c) said flap having a transverse centerline and at least one line of weakness disposed on either side of said centerline and inboard of said side edges, said lines of weakness allowing a portion of said flap to be frangibly fixed in said first position.
2. The flexible package of Claim 1, wherein said front face of said pocket has a dispensing aperture for dispensing sheet products.
3. The flexible package of Claim 2, wherein said dispensing aperture is formed by a slit in said front face, said slit having a width when formed of essentially zero mm.
4. The flexible package of Claim 2, wherein said dispensing aperture is formed in the shape of an oval.
5. The flexible package of Claim 1, having releasable and recloseable sealing means for repeatable sealing of said flap in said first position.
6. The flexible package of Claim 1, wherein said planar sheet material comprises a polymer chosen from the group consisting of: polyethylene, polypropylene, . . .

7. The flexible package of Claim 1, wherein each said line of weakness is formed by perforations.
8. A method of forming a flexible package for containing and dispensing sheet products, said method characterized by the steps of:
 - (a) providing a substantially rectangular flexible polymer sheet of suitable size, said sheet having first and second opposing sides defining a first dimension and third and fourth opposing sides defining a second dimension;
 - (b) forming at least two lines of weakness, each said line of weakness extending generally orthogonal from said first side, in the direction of said second side;
 - (c) placing a stack of said sheet products on said polymer sheet, said sheet products being substantially centrally disposed with respect to said first and second sides;
 - (d) folding a first portion of said polymer sheet such that said fourth side is disposed approximately parallel to said third side and approximately one-third said length from said third side thereby forming a pocket region containing said stack of sheet products;
 - (e) folding a second portion of said polymer sheet such that said third side is disposed approximately parallel to said fourth side, and approximately one-third said length from said fourth side to form a tri-folded package having first and second opposing side edges; and
 - (f) bonding a portion of said tri-folded polymer sheet near said first and second opposing side edges.

9. The method of Claim 8, wherein said lines of weakness are formed by perforating.
10. The method of Claim 8, wherein said first dimension is greater than said second dimension.

1/5

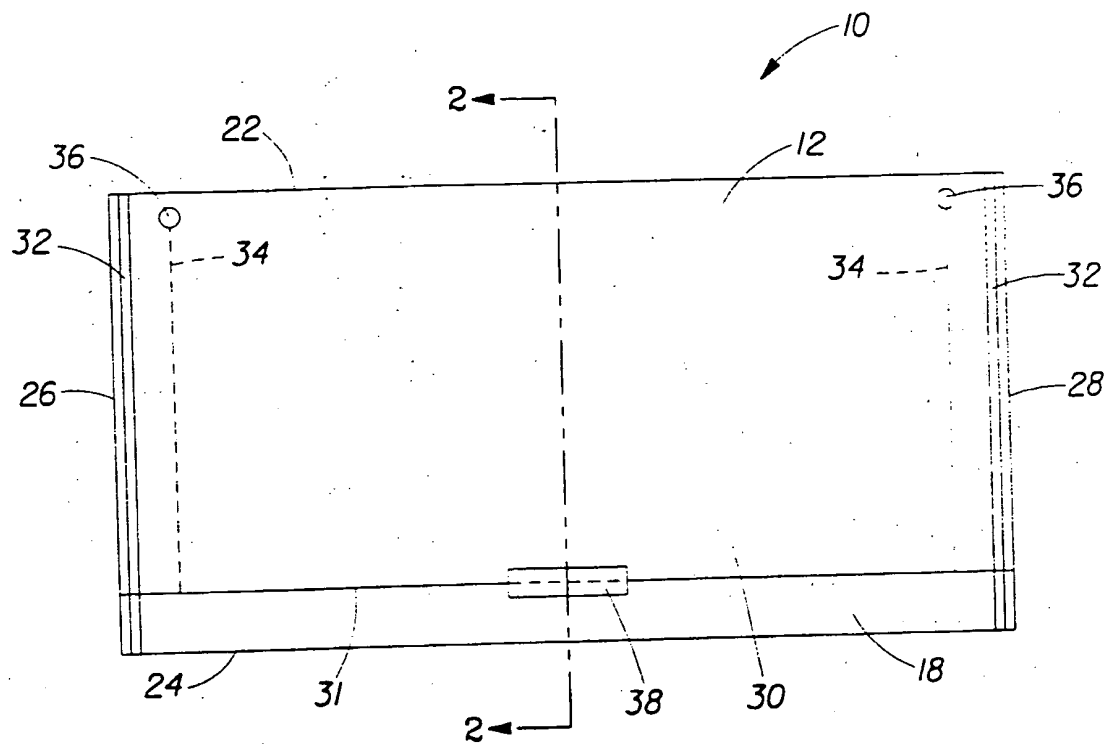


Fig. 1

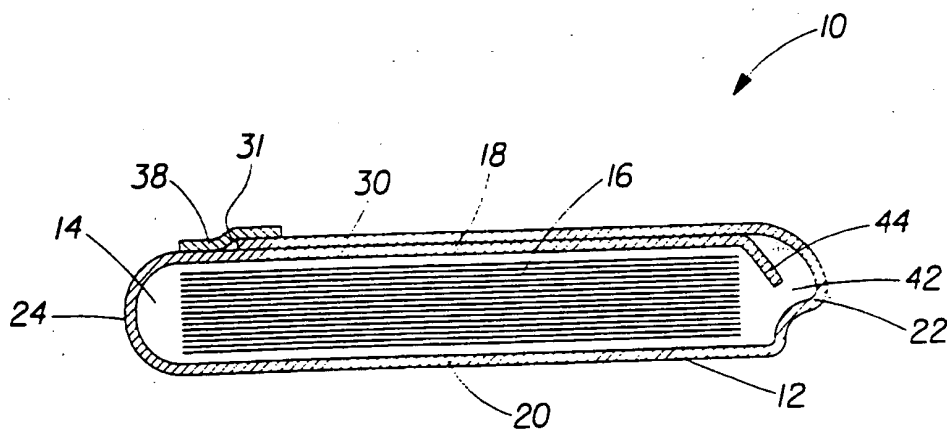


Fig. 2

2/5

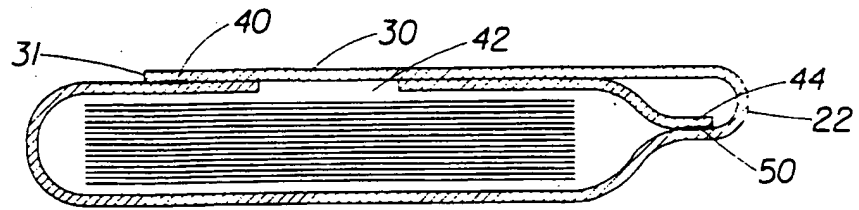


Fig. 3

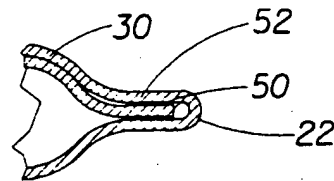


Fig. 3A

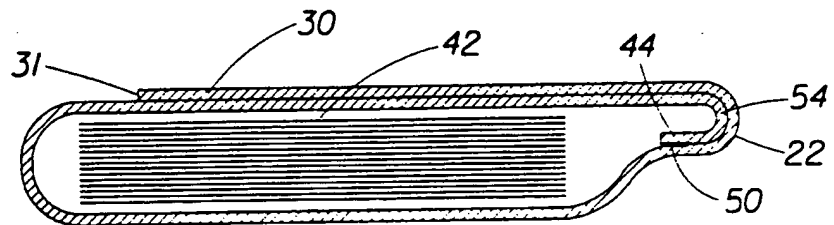


Fig. 4

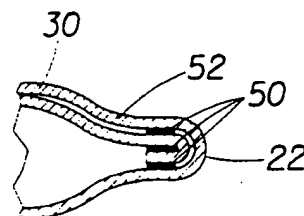


Fig. 4A

3/5

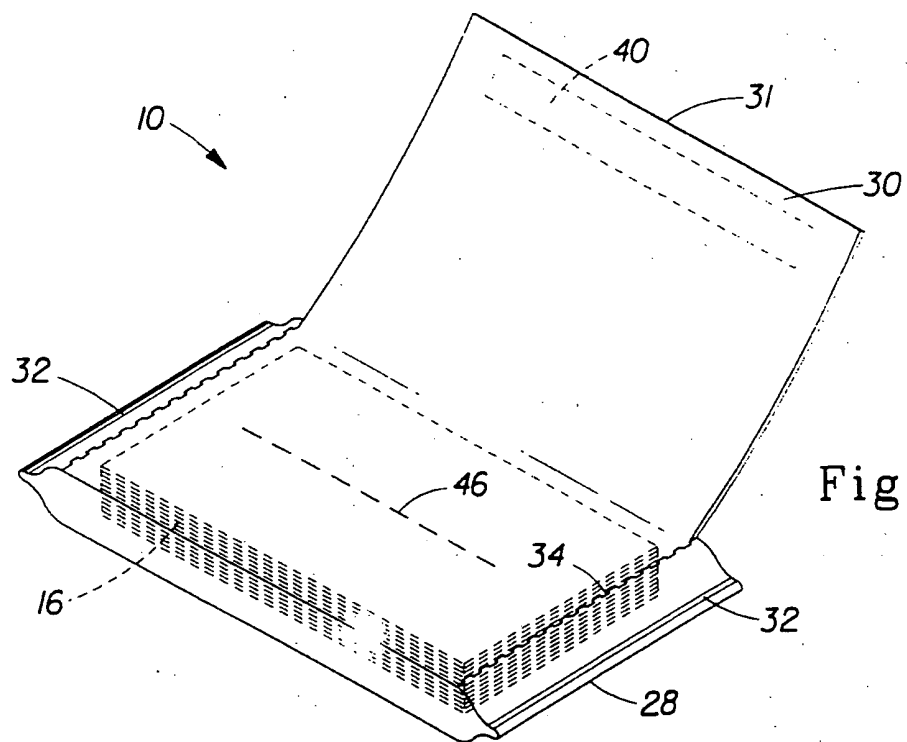


Fig. 5

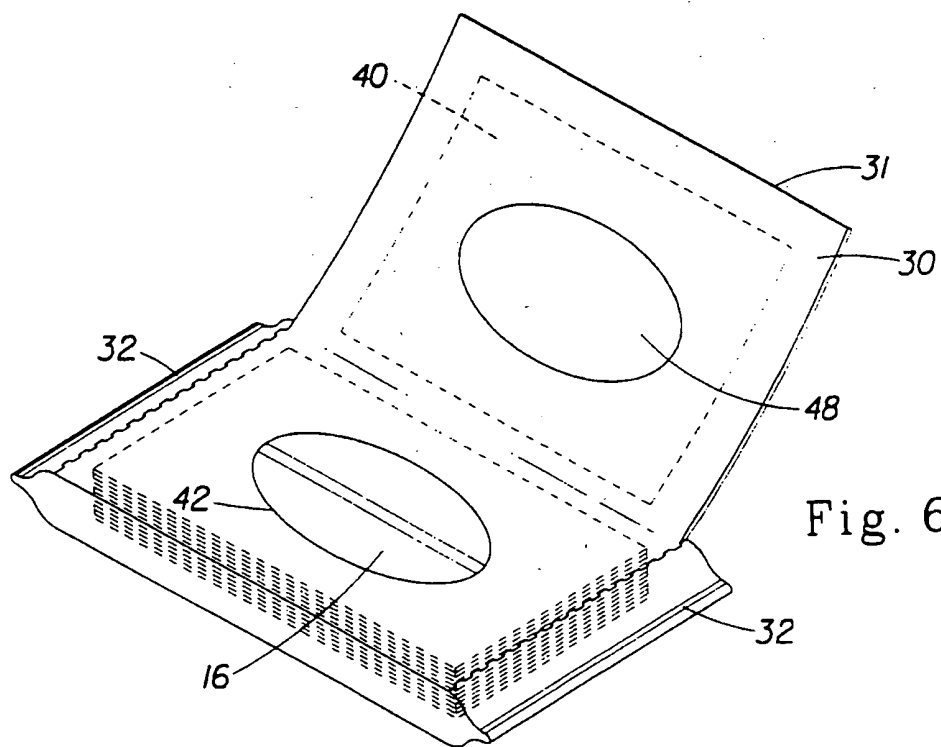


Fig. 6

4/5

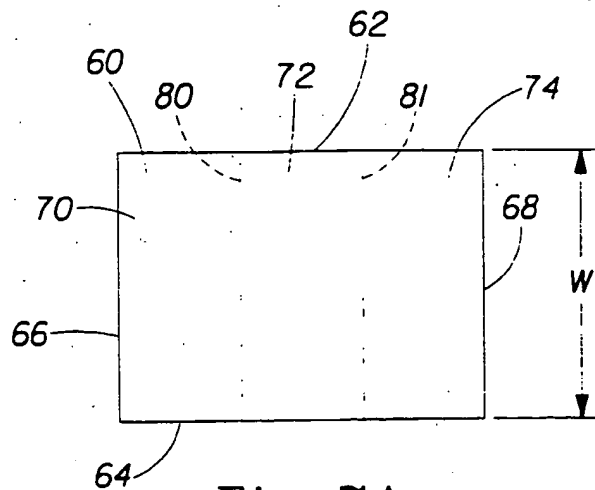


Fig. 7A

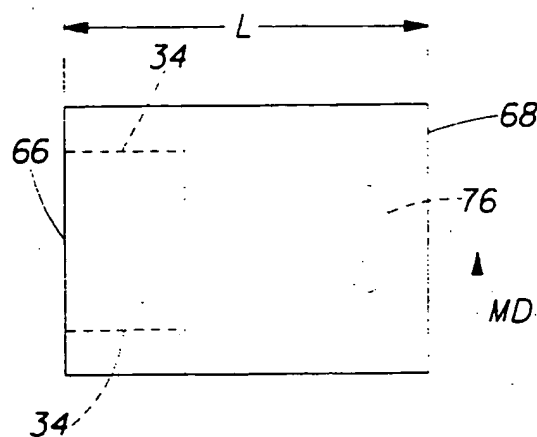


Fig. 7B

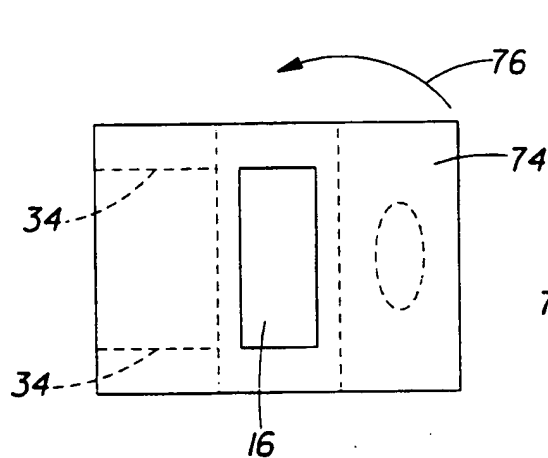


Fig. 7C

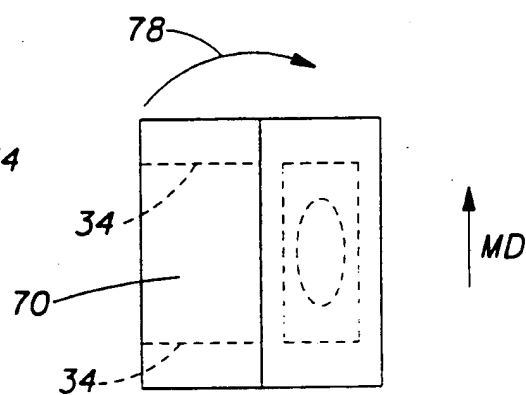


Fig. 7D

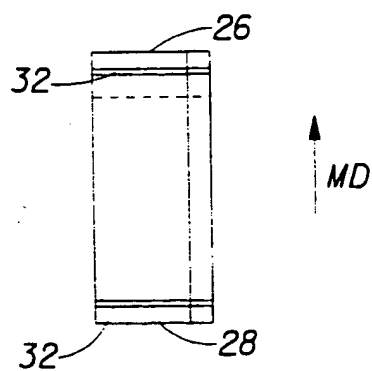


Fig. 7E

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 00/10165

A. CLASSIFICATION OF SUBJECT MATTER
 IPC 7 B65D83/08 B65D75/20

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 B65D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 4 131 195 A (WORRELL SR ROBERT A) 26 December 1978 (1978-12-26) cited in the application the whole document	1,2,4-6, 8,10
A	CH 361 911 A (SELWYN BROWN) 30 June 1962 (1962-06-30) page 5, line 97 - line 101; figure 4	1,3,8,10



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

& document member of the same patent family

Date of the actual completion of the international search

28 July 2000

Date of mailing of the international search report

07/08/2000

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
 NL - 2280 HV Rijswijk
 Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
 Fax: (+31-70) 340-3018

Authorized officer

Martin, A

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 00/10165

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 4131195 A	26-12-1978	AU 515834 B	07-05-1981
		AU 2835877 A	08-03-1979
		CA 1072062 A	19-02-1980
		GB 1562450 A	12-03-1980
		JP 1327630 C	30-07-1986
		JP 53031485 A	24-03-1978
		JP 60055388 B	04-12-1985
CH 361911 A		NONE	